

REMARKS

Claims 2-16 and 19-22 are pending. Claims 1, 17 and 18 are cancelled herein without prejudice or disclaimer. Claims 2-4, 16 and 19 are amended herein. New claims 20-22 have been added herein. Support for the amendments is detailed below. Support for the new claims is found in original claims 17 and 18 as well as page 14, line 9 to page 15, line 7 of the specification.

Applicants' Response to the Claim Rejections under 35 U.S.C. §102(e)

Claims 1-4, 7-10 and 13-15 are rejected under 35 U.S.C. § 102(b) as being anticipated by Singh et al. (WO 99/05204). In response thereto, applicants have amended the claims to more distinctly claim the subject matter regarded as the invention. Specifically, applicants have amended claim 4 to include the limitations of base claim 1 and included the feature that the pre-mix is free of isocyanate. Singh does not teach all the features of the pre-mix of amended claim 4.

As detailed below, Singh is directed to the use of aromatic polyester polyols as the polyfunctional isocyanate-reactive composition, in combination with the use of organo-phosphorous compounds to improve fire properties. This use is distinctly different from applicants' use of the organo-phosphorous compound of formula (1) as a vapor pressure reducing agent for HFC-245fa. Wherefore, applicants have amended claim 4 to recite a structure which is not taught by Singh. Specifically, applicants have amended the claims to be directed to a pre-mix composition as that set forth in claim 4, but excluding the isocyanate and other ingredients

required for the polyurethane of Singh. As set forth in the present application from page 28 to page 42, the pre-mixture comprises HFC-245fa and the organo-phosphorous compounds to reduce the high vapor pressure of HFC-245fa. This allows for ease in transportation of the pre-mix to the in-situ place for creation of the polyurethane. As set forth on page 42, lines 20-24 of the specification, the polyurethane foam is produced by mixing the pre-mix with polyisocyanate.

Singh is directed to a closed celled rigid polyurethane or urethane-modified polyisocyanurate foams which have improved fire resistance even when blown with hydrofluorocarbons in place of CFC or HCFC blown foams. See page 3, lines 16-19. Singh teaches that the use of over 40 wt.% of aromatic polyester polyols of average functionality lower than 3 as the polyfunctional isocyanate-reactive composition, along with the use of organo-phosphorous compounds in the foam formulation improves the fire properties of polyurethane foam prepared in the presence of HFC blowing agents. See page 4, lines 2-8. Further, Singh teaches HFC-245fa as a potential HFC blowing agent. See page 6, lines 15-21. As such, the invention of Singh et al. merely encompasses in-line foaming in a production facility.

As described in applicants' specification, when a premix composition needs to be stored for a long time period, the pressure resistance of the container storing the premix composition may be a concern because of the high vapor pressure of 1,1,1,3,3-pentafluoropropane. Further, when the premix composition is stored for a long period of time, and if the vapor pressure reducing agent transforms into phosphoric acid, etc., by hydrolysis caused by the water in the system, the polyurethane foaming is adversely affected. Therefore, excellent hydrolysis

resistance is required of the vapor pressure reducing agent, i.e., that it has a total acid content of 650 mg KOH or less. See page 5, lines 3 to 14; page 15, line 25 to page 16, line 20; page 18, line 14 to page 19, line 2; and page 20, line 21 to page 21, line 12 of the specification.

The present invention relates to a premix composition for use in in-situ foaming. The premix composition contains a polyol, a curing catalyst, 1,1,1,3,3-pentafluoropropane, a foaming stabilizer, a vapor pressure reducing agent represented by formula (1) and having a total acid content of 650 mg KOH or less, etc. In other words, the premix composition of the present invention does not contain isocyanate. The composition is stored in the form of a premix composition and transported to a site where polyurethane foam is used (e. g., at a construction site), and foaming is performed at the site by mixing it with isocyanate. The premix composition of the present invention achieves in-situ foaming without difficulty and the obtained polyurethane foam exhibits sufficient flame retardancy. In short, the premix composition of the present invention that contains polyol, 1,1,1,3,3-pentafluoropropane, a vapor pressure reducing agent represented by formula (1) and having a total acid content of 650 mg KOH or less, etc., allows a polyurethane foam to be stored and delivered to at a construction site without any difficulties, even after a long storage period. Singh does not teach or suggest this effect.

Contrary, Singh teaches that a polyol blend containing the organo-phosphorous compound which is mixed with HCF-245fa and isocyanate at the formation of the polyurethane. See page 19, lines 1-10 and Table 2, page 27. Hence there is no teaching of a pre-mix in Singh comprising both the organo-phosphorous compound and HCF-245fa but free of isocyanate. In

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Singh, the mixture of the polyol blend and HCF-245fa occurs under agitation, i.e. vigorous mixing. Page 19, lines 4-7.

Wherefore, applicants respectfully submit that the amendment to claim 4 clarifying that the structure of the present invention is a pre-mix free of isocyanate overcomes the structure of the polyurethane recited by Singh. Singh does not recognize the utility of the compound of formula (1) as a vapor reducing agent which allows for efficient transportation of HCF-245fa as a pre-mix prior to the formation of the polyurethane by combination with isocyanate; and, therefore does not teach or suggest the features of applicants' claim 4 requiring a pre-mix free of isocyanate.

Claim 16 is rejected under 35 U.S.C. § 102(b) as being anticipated by Singh et al. (WO 99/05204). The rejection of claim 16 is essentially identical to the rejection of claim 1, except that the Office acknowledges that claim 16 requires 1,1,1,3,3-pentafluoropropane. Hence, applicants have amended claim 16 similar to claim 4 by to recite a pre-mixture which is free of isocyanate. Applicants respectfully submit that amended claim 16 is not anticipated by Singh for the same reasons detailed above in regard to claim 4.

Applicants' Response to the Claim Rejections under 35 U.S.C. § 103

Claims 5 and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Singh et al. (WO 99/05204) as applied to claims 1 and 4 above, and further in view of Wicks (US 5,977,196). Claims 11 and 12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over

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Singh et al. (WO 99/05204) as applied to claims 1 and 4 above, and further in view of Wicks (US 5,977,196). Claims 17-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Singh et al. (WO 99/05204) as applied to claims 1 and 4 above, and further in view of Wicks (US 5,977,196). By addressing the rejection of the parent claims, as detailed above, the rejection of claims 5-6 and 11-12 should likewise be considered addressed by nature of the claims' dependencies.


In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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